

This Page Is Inserted by IFW Operations
and is not a part of the Official Record

BEST AVAILABLE IMAGES

Defective images within this document are accurate representations of the original documents submitted by the applicant.

Defects in the images may include (but are not limited to):

- BLACK BORDERS
- TEXT CUT OFF AT TOP, BOTTOM OR SIDES
- FADED TEXT
- ILLEGIBLE TEXT
- SKEWED/SLANTED IMAGES
- COLORED PHOTOS
- BLACK OR VERY BLACK AND WHITE DARK PHOTOS
- GRAY SCALE DOCUMENTS

IMAGES ARE BEST AVAILABLE COPY.

**As rescanning documents *will not* correct images,
please do not report the images to the
Image Problem Mailbox.**

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

D. RemarksObjections to Drawings

FIGS. 3A to 3E have been amended to address objections to the drawings. Replacement drawings are included herein. The drawings have been amended to include the legend "BACKGROUND ART".

Rejection of Claims 1-4 and 6-20 Under 35 U.S.C. §102(e) based on U.S. Patent No. 6,303,459 (Chen).

The rejection of claims 1-4 and 6-11 will first be addressed.

The invention of claim 1 recites a method of verifying a reticle that includes forming a conformal layer over a non-resist deposited layer that is formed on a uniform surface. The deposited layer includes a reticle pattern. The method further includes inspecting the reticle pattern for defects.

As is well established, anticipation requires the presence of a single prior art reference disclosure of each and every element of the claimed invention, arranged as in the claim.¹

The cited reference *Chen* does not show a deposited layer that includes a reticle pattern, as recited in claim 1. *Chen* discloses a diffusion barrier layer (argued to correspond to Applicants' conformal layer) formed over a passivation layer (argued to correspond to Applicants' deposited layer). However, the passivation layer does not include any pattern, let alone a reticle pattern.² In fact, *Chen* clearly teaches away from patterning the passivation layer by indicating a pattern forming etch stops at the passivation layer.³ Thus, the passivation layer is not patterned. *cd*

Because the cited reference never shows a deposited layer that includes a reticle pattern, and teaches away from such a limitation, the reference does not show every element of claim 1, and this ground of rejection is traversed. *cd - 2 lines 52-54*

In addition or alternatively, the cited reference *Chen* does not show an inspecting of the reticle pattern for defects, as recited in claim 1. To show such a limitation, the rejection relies on

¹ See *Lindemann Maschinenfabrick GmbH v. American Hoist & Derrick Col.*, 221 USPQ 481, 485 (Fed. Cir. 1984).

² See *Chen*, FIGS. 1-4, which shows that the passivation layer 14 is never patterned.

³ See *Chen*, Col. 6, Lines 38-40.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

the following portion of *Chen*.

5 With this reference point, the position of the reticle is adjusted over the wafer such that the reticle is precisely aligned with the previous layer on the wafer. A laser beam is typically used by the wafer stepper to sense the position of the alignment mark on the wafer.⁴

10 The above teaching from *Chen* is directed to aligning a reticle, not inspecting a reticle pattern for defects as recited in claim 1. Applicants emphasize that the "reticle pattern" of claim 1 is included in the deposited layer – and is not the reticle itself. Thus, because *Chen* only teaches the alignment of a reticle, there are no teachings regarding inspection of a reticle pattern, let alone the particular inspection for defects, as set forth in claim 1. Thus, additional limitations of the claim are not shown in the cited reference.

15 Various claims depending from claim 1 include additional limitations not shown in the reference.

Claim 4 recites the particular arrangement of a conformal layer comprising a layer of titanium nitride formed over a layer of titanium. *Chen* never shows or suggests such an arrangement. *Chen* recites possible materials contained in a diffusion barrier layer (argued to correspond to Applicants' conformal layer). However, such possible materials never recite 20 titanium as a possible material.⁵ Accordingly, because Applicants' claim 4 includes a material not mentioned in the reference, the claim cannot be anticipated, and this ground of rejection is traversed.

25 Still further, Applicants' claim 4 recites a multi-layer conformal layer (i.e., TiN formed over Ti). Such an arrangement is not shown in *Chen*. *Chen* does list multiple possible materials, but this is not sufficient for anticipation, as the particular combination recited is clearly not taught. Possible arrangements are never sufficient for anticipation.

The mere fact that a certain thing may result from a given set of circumstances is

⁴ *Chen*, Col. 2, Lines 60-63.

⁵ See *Chen*, Col. 5, Line 66 to Col. 6, Line 2. The materials listed include titanium nitride, but never titanium itself.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

not sufficient [to establish anticipation]...⁶

Thus, while *Chen* discusses possible material selections for a diffusion layer, *Chen* never shows or suggests a multilayer arrangement, let alone Applicants' very specific arrangement of claim 4.

5 Claim 8 recites that a deposited layer comprises layer of undoped silicon dioxide formed on a layer of phosphosilicate glass. This limitation is not shown or suggested by *Chen*. The rejection cites portions of *Chen* in support of this rejection, but such citations are directed to the wrong layer. The rejection relies on the following reasoning to show Applicants' layer of phosphosilicate glass in the deposited layer.

10 A typical diffusion barrier layer 16 may contain silicon nitride, phosphosilicate glass...⁷

It will be recalled that this diffusion layer of *Chen* is argued to correspond to Applicants' conformal layer, not Applicants' deposited layer.⁸ Thus, the above teaching, at best, supports a conformal layer of PSG, not a non-resist deposited layer of PSG, as recited in claim 8. Accordingly, claim 8 cannot be anticipated, as a non-resist deposited layer of PSG is never shown or suggested by the reference.

20 The rejection of claims 12-16 will now be addressed.

The invention of claim 12 is directed to a method of verifying a reticle that includes the steps of forming a conductive conformal layer greater than 100 Å over a deposited layer patterned with a reticle. The method also includes inspecting the pattern in the deposited layer.

25 To address this ground of rejection Applicants' incorporate by reference herein the same general arguments set forth above for claim 1. Namely, that *Chen* does not show, and in fact teaches away from a deposited layer patterned with a reticle. Further, a pattern is never inspected in *Chen*. Accordingly, all claim limitations are not shown and anticipation cannot be established.

Various claims depending from claim 12 include additional limitations not shown in the reference.

⁶ *In re Weiss*, 26 USPQ 2d 1885, 1888 (Fed. Cir. 1993).

⁷ *Chen*, Col. 5, Lines 66-67.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Claim 13 recites that inspecting the pattern comprises automatically inspecting the pattern with pattern inspection equipment. Such a teaching is not shown. The rejection cites the same reticle alignment teaching relied on for claim 1. Applicants' reiterate that alignment of a reticle situated over deposited layers does not show inspecting a layer patterned with the reticle.

5 Claim 16 recites particular patterning limitations for the deposited layer. As noted above, *Chen* does not show, and teaches away from patterning a deposited layer. Thus, such a limitation cannot be shown by the reference.

For all of these reasons this ground for rejection is traversed.

10 The rejection of claims 17-20 will now be addressed.

Claim 17 is directed to a method that includes forming at least one reticle patterned layer on a uniform surface, and increasing an inspection contrast between patterned and non-patterned portions of the reticle patterned layer by forming a conformal layer over the reticle patterned layer. The method further includes inspecting the reticle patterned layer.

15 To address this ground of rejection, Applicants' incorporate the arguments set forth above for claim 1. Namely, that a pattern is never inspected in *Chen*. Accordingly, all claim limitations are not shown and anticipation cannot be established.

20 Rejection of Claim 5 Under 35 U.S.C. §103, based on *Chen* in view of U.S. Patent No. 5,985,693 (*Leedy*).

Claim 5, which depends from claim 2 recites that a reticle pattern in the deposited layer includes features having a minimum size L, and the conformal layer has a thickness of no more than 1/2L.

25 As is well understood, to establish a prima facie case of obviousness, a rejection must meet three basic criteria. First, there must be some suggestion or motivation to modify a reference or combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference(s) must teach or suggest all claim limitations.

To the extent that this ground for rejection relies on the reference *Chen*, the comments set forth above for claim 1 are incorporated by reference herein. Namely, that various limitations are

³ See the Office Action, dated 1/30/03, Page 3, Lines 4-5.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

not shown, thus all claim limitations are not suggested by the cited combination, and a prima facie case of obviousness has not been established.

5 In addition or alternatively, it is also well established that a prima facie case of obviousness may also be rebutted by showing that the art, in any material respect, teaches away from the claimed invention.⁹ The reference *Leedy* clearly teaches away from the invention of claim 5.

10 Claim 5 recites particular limitations to a reticle pattern formed in a deposited layer. It will be recalled that such a deposited layer is a non-resist layer. The teachings of *Leedy* are directed to patterning resist layers.¹⁰ That is, Applicants' claim 5 explicitly recites a non-resist layer, yet the reasoning relied upon by the rejection is aimed at the opposite: a resist layer. Thus, the reference *Leedy* clearly teaching away from Applicants' non-resist claims. Accordingly, even if a prima facie case of obviousness has been established (Applicants' contend that this is not the case) the above citation is clear evidence rebutting any such case.

15 For all of the above reasons, the rejection of claim 5 is traversed

The present claims 1-20 are believed to be in allowable form. It is respectfully requested that the application be forwarded for allowance and issue.

20 Respectfully Submitted,

Bradley T. Sako 4/28/03
Bradley T. Sako
Attorney
Reg. No. 37,923

25 Bradley T. Sako
WALKER & SAKO, LLP
300 South First Street
Suite 235
San Jose, CA 95113
Tel. 1-408-289-5315

FAX RECEIVED

APR 28 2003

TECHNOLOGY CENTER 2800

⁹ *In re Geisler*, 43 USPQ2d 1362, 1366 (Fed. Cir. 1997).

¹⁰ See *Leedy*, Col. 35, Line 63-65.

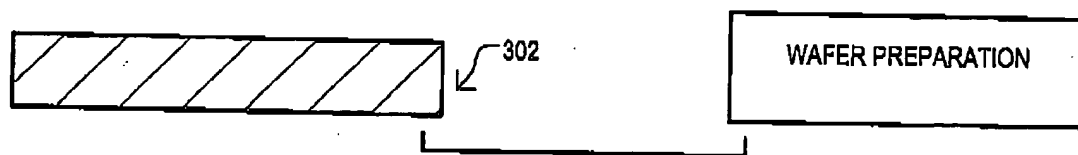


FIG. 3A (BACKGROUND ART)

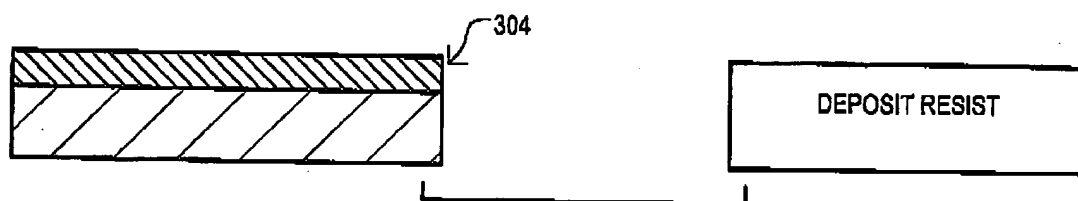


FIG. 3B (BACKGROUND ART)

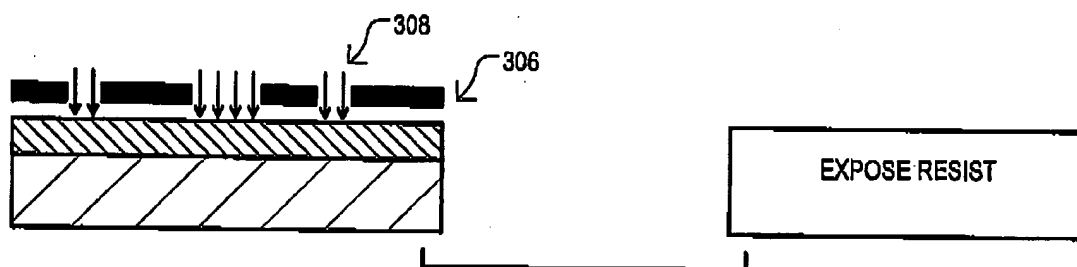


FIG. 3C (BACKGROUND ART)

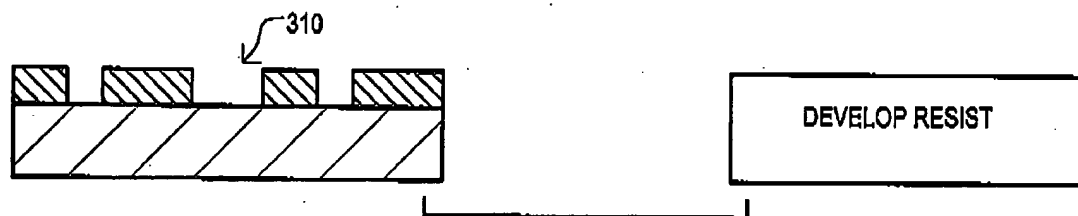


FIG. 3D (BACKGROUND ART)

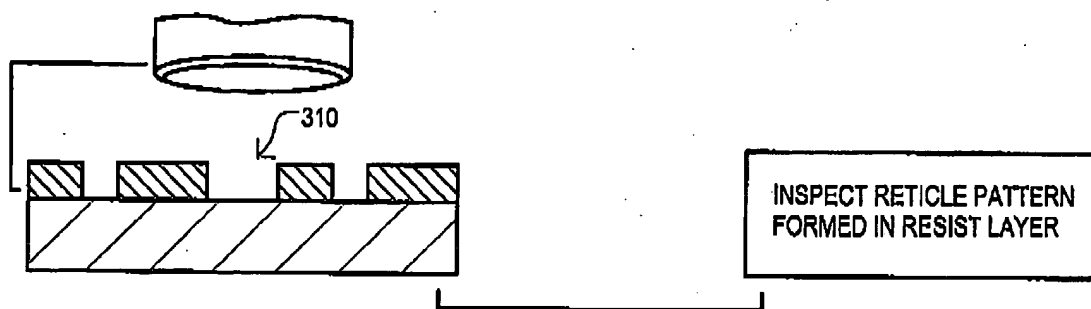


FIG. 3E (BACKGROUND ART)